



LADY IRWIN COLLEGE

GREEN AUDIT REPORT
2021-2022

PREPARED BY
EHS ALLIANCE SERVICES



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CERTIFICATE



AUDIT CERTIFICATE

PRESENTED TO

LADY IRWIN COLLEGE

Sikandra Road, Mandi House, New Delhi, 110001

Has been assessed by EHS Alliance Services for the comprehensive study of environmental impacts on institutional working framework to fulfill the requirement of

GREEN AUDIT

The green initiatives carried out by the institution have been verified on the report submitted and was found to be satisfactory.

The efforts taken by the management and the faculty towards environment and sustainability are appreciated and noteworthy.

AUDITOR SIGNATURE



25.11.2022
DATE OF AUDIT

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ACKNOWLEDGEMENT

EHS Alliance Services would like to thank the management of Lady Irwin College, New Delhi for assigning this important work of Green Audit. We appreciate the co-operation to the teams for completion of assessment.

We would like to especially thank **Prof. Anupa Siddhu – Director, Lady Irwin College** for giving us an opportunity to evaluate the environmental performance of the campus.

We would also like to thank **Audit Conveners - Prof. Puja Gupta (Convener, NAAC Cr. VII), Prof. Meenakshi Mital (Convener, NAAC Cr. VII), and Dr. Meenal Jain (Member, NAAC Cr. VII)**, for steering the audit process, without which the completion of the project would not have been possible. We are also thankful to other staff members for their constant support in completing the compilation of data in a timely manner.

We are also thankful to

Prof. Sushma Goel	<i>Vice Principal</i>
Prof. Rupa Upadhyay	<i>Convener, Garden Committee</i>
Ms. Vishakha Sambhav	<i>Member, NAAC Cr. VII</i>
Ms. Shefali Chopra	<i>Member, NAAC Cr. VII</i>
Ms. Mitali Yadav	<i>Member, NAAC Cr. VII</i>
Mr. Rajneesh Dwevedi	<i>Member, Eco-club</i>
Ms. Seema Das	<i>S/O, Accounts Department</i>
Mr. Amit	<i>Administrative Department</i>



DISCLAIMER

EHS Alliance Services Audit Team has prepared this report for Lady Irwin College based on input data submitted by the representatives of Lady Irwin College complemented with the best judgment capacity of the expert team.

While all sensible care has been taken in its preparation, details contained in this report have been compiled in good faith based on information gathered.

It is further informed that the conclusions are arrived following best estimates and no representation, warranty or undertaking, express or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Signature

LEAD AUDITOR



|| CONCEPT AND CONTEXT

The National Assessment and Accreditation Council, New Delhi (NAAC) has made it mandatory from the academic year 2019–20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Green Audit is assigned to the Criteria 7 of NAAC, National Assessment and Accreditation Council which is a self-governing organization of India that declares the institutions as Grade A, Grade B or Grade C according to the scores assigned at the time of accreditation. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

In view of the NAAC circular regarding Green auditing, the college management decided to conduct an external environment assessment study by a competent external professional auditor. The green audit aims to examine environmental practices within and outside the Lady Irwin College campus, which impact directly or indirectly on the atmosphere. Green audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of university/college environment. It was initiated with the intention of reviewing the efforts within the institutions whose exercises can cause risk to the health of inhabitants and the environment.

Through the green audit, a direction as how to improve the structure of environment and inclusion of several factors that can protect the environment can be commenced. This audit focuses on the Green Campus, Waste Management, Water Management, Air Pollution, Energy Management & Carbon Footprint etc. being implemented by the institution. The concepts, structure, objectives, methodology, tools of analysis, objectives of the audit are discussed below.



INTRODUCTION

Now days, the educational institutions are becoming more thoughtful towards the environmental aspects and as a result new and innovative concepts are being introduced to make them sustainable and eco-friendly. To preserve the environment within the institution, a number of viewpoints are applied by the several educational institutes to solve their environmental problems such as promotion of the saving the energy, waste recycle, water consumption reduction, water harvesting and many more...

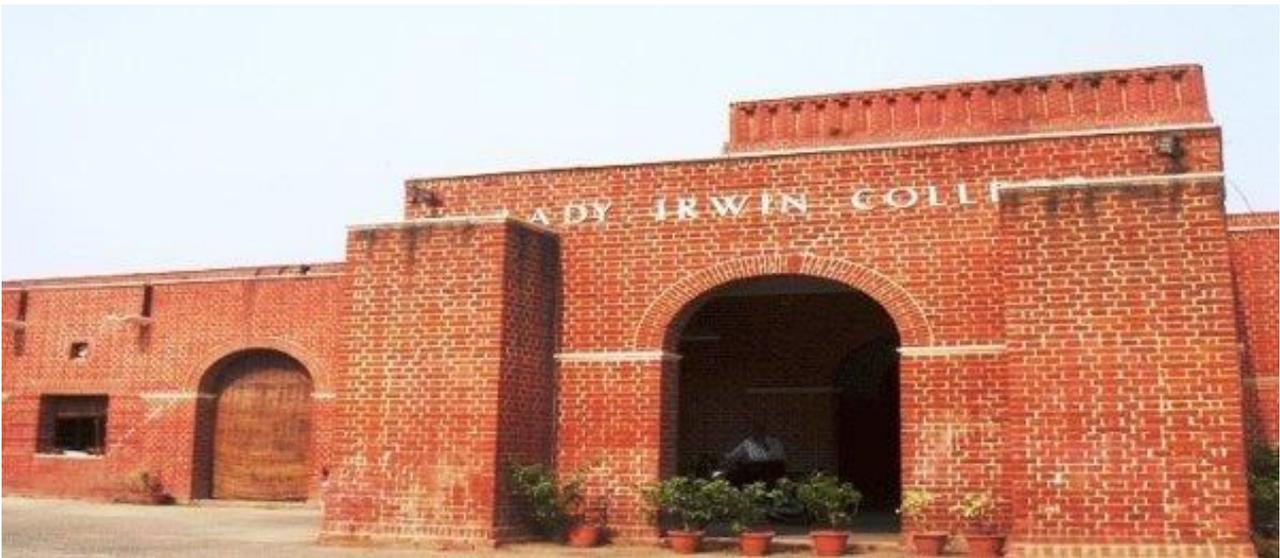
The activities carried out by the institution can also create adverse environmental impacts. Green audit is defined as an official inspection of the effects an institution has on the environment. Green Audit is conducted to evaluate the actual scenario at the institution campus. Green audit can be a useful tool for a college/university to determine how and where they are using the most of the energy or water or resources; the college can then decide how to implement changes and makesavings. It can also be used to determine the nature and volume of waste, which can be used for a recycling project or to improve waste minimization plan.

Green auditing and the application of mitigation measures is a win-win situation for all the institutions, the learners and the mother earth. It can also result in health awareness and can promote the environmental awareness, values and beliefs. It provides a better understanding to staff and students about the Green impact on institution. Green auditing also upholds financial savings through reduction of resource usage. It gives an opportunity to the students and teachers for the development of ownership of the personal and social responsibility. The audit process involves primary data collection, site walk through with the team of College/University including the assessment of policies, activities, documents and records.



OVERVIEW OF THE COLLEGE

Lady Irwin College is a constituent college for women, in the University of Delhi, under the memorandum of Association of The Lady Irwin College Society vide Regd. Society Registration Act 1860 (Punjab Amdmt.) 1957 Registration No.4163 (1969-70) & maintained by the Governing Body & UGC Grants. Lady Irwin College is a premiere institution affiliated to University of Delhi for Undergraduate and Postgraduate education in Home Science. It also supports doctoral programs in five areas of Home Science. Other programmes are two year B.Ed. (for students of Home Science), B.Ed. Special Education MR (for students from all streams) and one year Postgraduate Diploma in Dietetics & Public Health Nutrition.



It aims for holistic development of women students, and their capacity building through carefully designed academic programmes and extramural activities.

The Lady Irwin College aphorism is VIDYA HI SEWA. The teaching learning transactions true to the motto Endeavour to inculcate a sense of knowledge to serve through carefully designed outreach experiences.

The College has always provided headship to other institutions in the nation in teaching, research and extension in Home Science, both at central universities and Home Science colleges with agricultural institutions.



Lady Irwin College has celebrated 83 years in 2015. The education in this college aims towards capacity building for entrepreneurship, improved quality of life and overall development of the students. It is a nodal and template institution for Home Science education in the country.

The academic disciplines in the college are artistic, creative, culturally rooted and contemporary. The programmes are scientifically planned which include education in textile technology, food processing, metabolism, environment, sustainable technologies, food safety, health and disease and human development. The focus of college is to have holistic education for the all-round development of the students.

High standard of education is maintained in pedagogical strategies and course structuring by the faculty members. The curriculum is internationally competitive. The college hopes to improve the talent and nurture creativity among its students for playing positive role in the society.



VISION

Strives to inculcate the spirit of service along with professional development and skills for women empowerment through state of the art education, research and extension by nurturing innovation, leadership and national development.

Lady Irwin College has been a pioneer in women's education. Set up more than eight decades ago, the vision for empowering women continues to be the key thrust of the College. It is indeed a matter of pride for us that the Father of the Nation Mahatma Gandhi gave us our motto Vidhya Hi Sewa (service through knowledge). True to the motto, our educational endeavour has been to inculcate the spirit of service along with professional growth of students. The college remains committed to building leadership, conscious citizenry and active participation of women for furthering national developmental goals. The college encourages the development of scientific temper with special focus on individual, family and community life. The education in the college aims towards developing creative and critical thinking, nurturing innovation and excellence. Lady Irwin sees its students building capacity to acquire global skills for entrepreneurship, professional proficiency and improved quality of life.

Eminent national and international leaders helped envision Lady Irwin College goals and the role it could play in the field of higher education for women. They built strong foundations based on core values of social justice, veracity, service and sustainability for achieving excellence in all spheres of life. These have continued to guide and contour the curricular and co-curricular thrusts of the college through the decades.

Since its inception, Lady Irwin College, has been a flag-bearing institute for Home Science education in the country, both at the school and college level and has always provided leadership to other institutions across the country. The knowledge, innovations, tenets and thrusts provided by the college over the years have percolated to put Home Science as a discipline on the academic map of India.

MISSION

The college faculty has consistently strived to contemporize its academic content through innovative research, strong community outreach and implementation of new technological knowledge in the field of Home Science. Every department of the college, along with developing core discipline specific skills among the students, also addresses larger societal issues like health, gender, conservation of textile heritage, socio-economic inequalities, community mobilization, people's participation, resource utilization, environment and education.



The curriculum helps young women students develop key life skills for their future professional and societal roles. Their experiences at college are designed to facilitate self-development and nurture them so that they become aware, active and enthusiastic members of the community and the nation at large. In a nutshell, through curricular and co-curricular activities at both UG and PG levels, we strive to:

- Accomplish training and development of young women for professional employment
- Generate an appreciation and respect for our cultural heritage and traditions with a critical orientation towards social and economic advancement
- Undertake training of trainers and educators
- Develop research and critical analysis skills for analyzing and suggesting national development strategies
- Strengthen linkages with other teaching and research institutions and professionals at all levels
- Give impetus to community outreach and extension

The courses at Lady Irwin strive to build a cadre of professionals:

- Focusing specifically on issues, programmes and policies of health and well-being of children, women and families
- Nutrition, dietetics, food processing, food safety and security
- Heritage textiles, textile technology and apparel design
- Early childhood care and education, parenting, family counselling
- Education of children in formal and non-formal settings, including persons with disabilities
- Sustainable management of resources and new product development
- Communication for development, participatory communications and innovative media development

Lady Irwin College offers following programs

Postgraduate Programmes

- B.Ed. – Two Year degree course
- B.Ed. Special Education (MR) – Two Year degree course
- Postgraduate Diploma in Dietetics and Public Health Nutrition – PGDDPHN (1 Year)
- M.Sc. – Four semester degree course in the following specializations
 - Food and Nutrition
 - Human Development and Childhood Studies
 - Fabric and Apparel Science
 - Development Communication and Extension
 - Resource Management and Design Application



Undergraduate Programmes

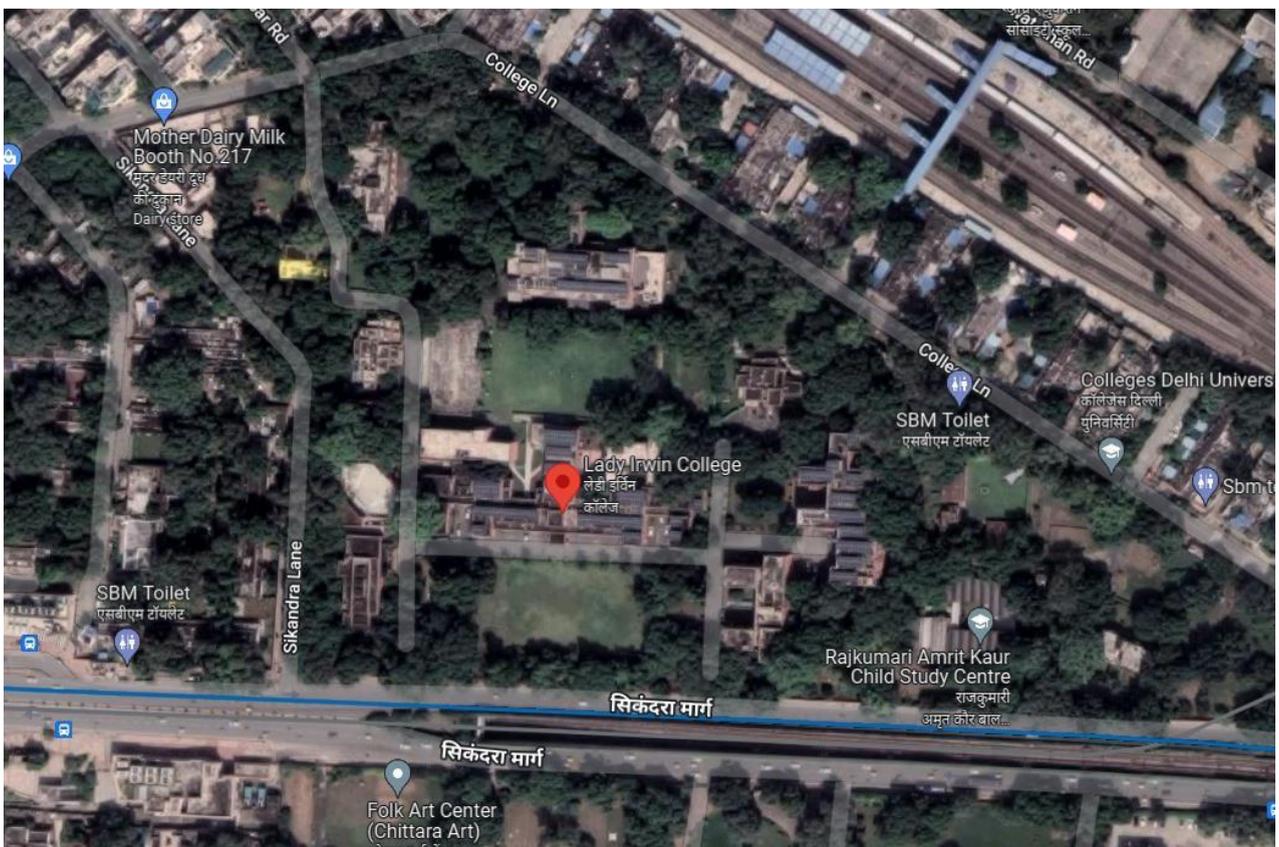
- B.Sc. Home Science (3 Years)
- B.Sc. (Hons) Home Science (3 Years)
- B.Sc. (Hons) Food Technology (3 Years)
- NEP Cluster SEC,VAC and AEC Sem I(Nov.2022-Feb. 2023)

Ph. D. All 5 specializations

Short-term Certificate Courses

- Rhinoceros Course
- Retail Management Course
- CSR course
- Auto CAD Course

Map location of campus





AUDIT PARTICIPANTS

On behalf of Lady Irwin College, New Delhi

Name	Designation/Department
Prof. Anupa Siddhu	Director, Lady Irwin College
Prof. Sushma Goel	Vice Principal
Prof. Puja Gupta	Convener, Environment Audit & NAAC CR-VII
Prof. Meenakshi Mital	Convener, Environment Audit & NAAC CR-VII
Dr. Meenal Jain	Convener, Environment Audit & Member, NAAC CR-VII
Ms. Vishakha Sambhav	Member, NAAC CR-VII
Ms. Shefali Chopra	Member, NAAC CR-VII
Ms. Mitali Yadav	Member, NAAC CR-VII
Ms. Geetika Mishra	Ph.D. Scholar

On behalf of EHS Alliance Services

Name	Position	Qualifications
Dr. Uday Pratap	Lead-Auditor	Ph.D. , PDIS, Lead Auditor ISO 14001:2015, QCI – WASH, Field expert
Mr. Shamsher Kharab	Co-Auditor	M.Sc., M.Tech in Environment Sciences, Field Expert, Post Diploma in Industrial Safety Management

EXECUTIVE SUMMARY

Green auditing is an essential step to identify and determine whether the institutions practices are sustainable and ecological. Traditionally, we were upright and efficient users of natural resources. But over the period of time, excessive usage of resources like water, electricity, petrol, etc. have become habitual for everyone especially, in urban and semi-urban areas. It is actually the right time to check if we (our process) are consuming more than required resources? Whether we are using resources sensibly?

Green audit standardizes all such practices and provides an efficient way to use natural resources. In the time of climate change and resource exhaustion it is necessary to re-check the processes and convert it in to green and sustainable. Green audit provides an approach for it. It also increases overall awareness among the individuals working in institution towards the eco-friendly environment.

This is the first attempt to conduct a green audit of the Lady Irwin College campus for fulfilment of NAAC criteria. This audit was mainly focused on greening indicators like consumption of energy in terms of electricity and fossil fuel, quality of soil, water usage, vegetation, waste management practices and carbon foot print of the campus. Initially a questionnaire was shared to know about the existing resources of the campus and resource consumption pattern of the students and staffs in the Lady Irwin College. The questionnaire was supplemented with interviews, discussion and field surveys.



GREEN AUDIT – ANALYSIS

1.1 GENERAL INFORMATION

1. Does any Green Audit conducted earlier?

Yes, This is very first time Lady Irwin College has gone for External Green Audit in a systematic way of monitoring their environmental eminence.

2. What is the total strength (people count) of the Institute?

Students

Male: 0 Female: 1419 Total: 1419

Teachers (including guest faculty)

Male: 7 Female: 97 Total: 104

Non-Teaching Staff

Male: 90 Female: 23 Total: 113

Total Strength

Male: 97 Female: 1539 Total: 1636

3. What is the total number of working days of your campus in a year?

There are one hundred eighty (180) working days in a year.

4. Where is the campus located?

Lady Irwin College is located at Sikandra Road, Mandi House, New Delhi, 110001

5. Which of the following are available in your institute?

Garden area	Available
Playground	Available
Kitchen	Available
Toilets	Available
Garbage Or Waste Store Yard	Available
Laboratory	Available
Canteen	Available
Hostel Facility	Available
Guest House	Not Available



6. Which of the following are found near your institute?

Municipal dump yard	Not in vicinity of institute
Garbage heap	No Garbage heaps
Public convenience	Public convenience is available
Sewer line	Approximately 2 KM sewer line within campus
Stagnant water	No stagnant water
Open drainage	No
Industry – (Mention the type)	No
Bus / Railway station	Metro/Bus connectivity
Market / Shopping complex	Available
Bus / Railway station	Mandi House bus stop and Metro Station
Market / Shopping complex	Available

1.2 WASTE MINIMIZATION AND RECYCLING

1. Does your institute generate any waste? If so, what are they?

Yes, Solid waste, Canteen waste, paper, plastic, horticulture, electronic waste, BMW waste, etc.

2. What is the approximate amount of waste generated per day? (in KG approx.)

Biodegradable waste - 20 Kg
 Non-biodegradable waste - 1 Kg
 Biomedical Waste - 2 Kg
 Others < 2 Kg

3. How do you manage the generated waste? Write all methods your institute follow for waste management - Example, Composting, Recycling, Reusing, Donation, etc.

➤ **Paper waste:** The College has tied up with “Jaagruti – Waste Paper Recycling Services” for managing its paper waste. All the used paper of college is sent to them for recycling into useful products like notepads for use by college staff and students. This initiative marks Lady Irwin College as a zero paper waste institution. **One side printed Paper is re-used for internal communication. Moreover, emphasis is laid on circulating e-notices and assignments.**

Plastic Waste: Use of plastic in any form is discouraged in the college campus and efforts are taken by all departments to reduce and reuse plastic waste. Students of department materials such as science kits and educational games for Special Needs children from plastic waste. Resource Management & Design Application conceptualize and develop lifestyle products using plastic waste. Department of Education develops teaching-learning



- **Kitchen and Garden waste:** In April 2019, Lady Irwin College in collaboration with Indian Pollution Control Association (IPCA) took an initiative to install Aerobins in the campus. Aerobins have revolutionized the system of home and garden waste management. They use a patented lung or aeration core inside a sealed bin to promote aerobic break down of organic matter releasing nutrients into the soil. Other than this, the kitchen and garden waste is also managed by converting it into manure using Roly-poly and Vermicomposting. This manure is used in maintaining the campus's exquisite landscape as well as organic farming. Leaf composting is done in-house which is also put on sale in months of excessive leaf fall in order to clean the pits.

4. Do you use recycled paper in institute?

Yes, Lady Irwin College uses Note pads and paper rims (of recycled papers) for faculty and students

5. How would you spread the message of recycling to others in the community?

- College has participated in Campus impact challenge under the aegis of TERI and Genpact to make campus zero paper waste and organized various campaigns to aware the students and staff.
- Sessions were organized for Rakshak staff for waste segregation and Aerobin.
- Various campaigns for awareness are organised by NSS team.
- Various webinars, lectures and seminars are conducted.

6. Can you achieve zero garbage in your institute? If yes, how?

Not yet achieved. Lady Irwin College is in process to achieve zero garbage by doing below things:

- Waste segregation done at source
- Biodegradable waste put into Aero-bins to convert it into compost
- Recycling of all kinds of waste such as paper, plastic, e- waste and wet waste into compost.

1.3 GREENING THE CAMPUS

1. Is there a garden in your institute?

Yes, garden of 43545.00 Sqm area is there in campus.

2. Do students spend time in the garden?

Yes, students spend around 2-4 Hours during winters.



3. Total number of Plants in Campus?

Campus has maintained greenery well. There are more than 500 types of plant species in campus.

S. No	Common Name	Scientific Name	S. No	Common Name	Scientific Name
1	Champa	<i>Plumeria obtusa</i>	31	Sharifa	<i>Annona reticulata</i>
2	Khajoor Palm	<i>Phoenix dactylifera</i>	32	Amla	<i>Phyllanthus emblica</i>
3	False Ashoka	<i>Polyalthia longifolia</i>	33	Amaltash	<i>Cassia fistula</i>
4	Semhal	<i>Bombax ceiba</i>	34	Pilkhan	<i>Ficus virens</i>
5	Putranjiva	<i>Putranjiva roxburghii</i>	35	Kathal	<i>Artocarpus heterophyllus</i>
6	Maulsari	<i>Mimusops elengi</i>	36	Amrood	<i>Psidium guajava</i>
7	Arjun	<i>Terminalia arjuna</i>	37	Gurbelia	<i>Albizia procera</i>
8	Narangi	<i>Citrus reticulata</i>	38	Ullu	<i>Ailanthus excelsa</i>
9	Neem	<i>Azadirachta indica</i>	39	curry patta	<i>Bergera koenigii</i>
10	Bakayan	<i>Melia azedarach</i>	40	Kachnar	<i>Bauhinia variegata</i>
11	Peepal	<i>Ficus religiosa</i>	41	Harsinghar	<i>Nyctanthes arbor-tristis</i>
12	Jamun	<i>Syzygium cumini</i>	42	Chiksi	<i>Cassia absus</i>
13	Mango	<i>Mangifera indica</i>	43	Sangtra	<i>Citrus aurantium</i>
14	Bottle brush	<i>Callistemon spp</i>	44	Malta	<i>Citrus sinensis</i>
15	Mulberry	<i>Morus alba</i>	45	Emlī	<i>Tamarindus indica</i>
16	Goolar	<i>Ficus racemosa</i>	46	Semjha	<i>Bauhinia retusa</i>
17	Baer	<i>Ziziphus mauritiana</i>	47	Cycas	<i>Cycas revoluta</i>
18	Bael Patri	<i>Aegle marmelos</i>	48	Papri	<i>Bauhinia racemosa</i>
19	Kikar	<i>Acacia nilotica</i>	49	Mor pankhi	<i>Thuja orientalis</i>
20	Palm	<i>Elaeis spp.</i>	50	Biota	<i>Biota orientalis</i>
21	Nimboo	<i>Citrus limon</i>	51	Kataria	<i>Xylosma longifolium</i>
22	Shiv babuli	<i>Couropita guianensis</i>	52	Araucaria	<i>Araucaria</i>
23	Rubber Plant	<i>Ficus elastica</i>	53	Papita	<i>Carica papaya</i>
24	Pterospermum	<i>Pterospermum acerifolium</i>	54	Jatropha	<i>Jatropha spp</i>
25	Baad	<i>Ficus benjamina</i>	55	Silver	<i>Grewia abutifolia</i>
26	Kandel	<i>Butea monosperma</i>	56	Chiku	<i>Achras zapota</i>
27	Eucalyptus	<i>Eucalyptus spp.</i>	57	Anar	<i>Punica granatum</i>
28	Gulmohar	<i>Delonix regia</i>	58	Ficus	<i>Ficus spp.</i>
29	Jungle jalebi	<i>Pitrecellobium dulce</i>	59	Pinus	<i>Pinus spp.</i>
30	Banana	<i>Musa pudica</i>	60	Bargad	<i>Ficus bengalensis</i>



4. Is the Lady Irwin College having any Horticulture Department? (If yes, give details)

Yes, 5 team members

5. How many Tree Plantation Drives organized by campus per annum?

Three plantation drives were carried out.

6. How many trees and plants were planted in last drive? And, what is the survival rate?

In each plantation drive on average nearly 10 saplings were planted. Survival rate is more than 90% at present.

7. Is there any Plant Distribution Program for Students and Community?

The Lady Irwin College has a practice where all guests are given a planter as a gift rather than a bouquet of flowers

8. Is there any Plant Ownership Program?

No

1.4 WATER AND WASTEWATER MANAGEMENT

1. List uses of water in your institute

Basic use of water in campus:

Drinking – 47.31 KL/month

Gardening – 1959.53 KL/month

Kitchen and Toilets – 310.68 KL/month

Others – 113.02 KL/month

Hostel – 429.20 KL/Month

Total = 2859.73 KL/Month



2. How does your institute store water? Are there any water saving techniques followed in your institute?

Lady Irwin College relies on DJB for water as a primary source and has bore well as a secondary source. Total water storage is 110600 liters within the College campus.

Location Name	water Tank Size (Liters)	Count of Tanks	Total Storage
Library	500	4	2000
Library	1000	1	1000
House Block	1000	3	3000
House Block	12000	1	12000
F/T Block	1000	1	1000
F/T Block	2000	1	2000
F/T Block	12000	1	12000
Admin Block	300	1	300
Admin Block	500	1	500
Admin Block	1000	10	10000
Textile Block (Old B.Ed.)	300	1	300
Textile Block (Old B.Ed.)	500	1	500
Textile Block (Old B.Ed.)	1000	5	5000
Textile Block (Old B.Ed.)	2000	1	2000
PG Block	500	2	1000
PG Block	1000	1	1000
PG Block	2000	3	6000
DHCS Nusrey	300	1	300
DHCS Nusrey	500	3	1500
DHCS Nusrey	10000	1	10000
Staff Office	300	7	2100
Staff Office	1000	1	1000
Student Center	1000	1	1000
Student Center	2000	1	2000
Director residence	500	1	500
Director residence	1000	3	3000
Staff Office	500	20	10000
Staff Office	15000	1	15000
Others	1000	4	4000
Main gate	300	2	600
Grand Total			110600



Saving Techniques

- *Avoid overflow of water controlled valves are provided in water supply system.*
- *Close supervision for water supply system.*
- *Water Conservation awareness for new students*
- *Sprinklers usage for gardening and grass cover*
- *Lady Irwin College ensures that the faucets in the washrooms and water filtration units are checked regularly and do not have any leakages.*
- *Lady Irwin College has also initiated the installation of auto push taps to reduce water wastage.*

3. Locate the point of entry of water and point of exit of waste water in your institute.

Entry – Lady Irwin College uses DJB water and have bore wells as a secondary source of water

Exit – From Canteen, Toilets, bathrooms, laboratories and Hostels through covered drainage which is connected to sewage

4. Write down ways that could reduce the amount of water used in your institute

Basic ways:

- *Close the taps after usage*
- *Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage*
- *The Lady Irwin College ensures that the faucets in the washrooms and water filtration units are checked regularly and do not have any leakages.*
- *The Lady Irwin College has initiated the installation of auto push taps to reduce water wastage.*

1.5 ANIMAL WELFARE

1. List the animals (wild and domestic) found on the campus (dogs, cats, squirrels, birds, insects, etc.)

Mammals- 06

Reptiles- 04

Birds – 47

Amphibian- 02

Butterflies- 09



2. Does your institute have a Biodiversity Program or a KARUNA CLUB?

No

3. Is there any incidence of animals getting wounded / affected due to unfavorable conditions existing in your School/ College/ University or nearby (like a dog getting wounded, poisoning of animals, improper caging of animals, hunting of animals, etc.)?

No

1.6 CARBON FOOTPRINT - EMISSION & ABSORPTION

1. Electricity used per year - CO₂ emission from Electricity

$$\begin{aligned} &= (\text{electricity used per year in kWh}/1000) \times 0.84 \\ &= 362843 \times 0.84 \\ &= 304.79 \text{ tons} \end{aligned}$$

2. LPG/PNG used per year - CO₂ emission from LPG/PNG

$$\begin{aligned} &= (\text{LPG/PNG used per year in kg}/1000) \times 2.99 \\ &= 6840 \times 2.99 \\ &= 20.45 \text{ tons} \end{aligned}$$

3. Diesel used per year - CO₂ emission from HSD (Diesel)

$$\begin{aligned} &= (\text{diesel used per year in litre}/1000) \times 2.68 \\ &= 240 \times 2.68 \\ &= 0.64 \text{ tons} \end{aligned}$$

4. Transport used per year - CO₂ emission from buses and cars

$$\begin{aligned} &= \text{Co}_2 \text{ emission by buses} + \text{Co}_2 \text{ emission by cars} \\ &= 0 + = 15 * 2 * 2 * 180 / 100 * 0.02 \\ &= 2.16 \text{ tons} \end{aligned}$$

Total CO₂ emission per year cumulative by electricity usage + LPG + Diesel consumption + transportation is 328.04 tons.



CARBON ABSORPTION BY FLORA IN THE INSTITUTION

Carbon absorption capacity of one full grown tree 22 kg CO₂ Therefore Carbon absorption capacity of 527 full-grown trees $527 \times 22 \text{ kg CO}_2 = 11.59 \text{ tons of CO}_2$.

The carbon absorption capacity of 512 semi-grown trees is 50% of that of full-grown trees. Hence the carbon absorption $512 \times 6.8 \text{ kg of CO}_2 = 3.48 \text{ tons of CO}_2$

There are approximately Hedge Plants 5000 of various species being raised in the gardens and grown in the areas where no buildings are built Carbon absorption of bush plants varies widely with their species. Certain bushes absorb very high level of CO₂ where as some others absorb very low level of CO₂. In the absence of a detailed scientific study, 200g of CO₂, absorption is taken per bush (in consultation with Environmental Science specialists). Based on this, total carbon absorption of bushes is $5000 \times 200 \text{ g} = 1.0 \text{ tons of CO}_2$

The lawns on the campus have buffalo grass, Mexican grass and indigenous grass species and cover a total area of 468714.48 sq. ft. Carbon absorption capacity of a 10 sq. ft. area of lawn is 1 g per day Therefore, carbon absorption by lawn area $468714.48 \times 365 \times 0.1 \text{ g CO}_2 = 17.11 \text{ tons of CO}_2$

Grand total of carbon absorption capacity of the campus is 33.18 tons.

GREEN INITIATIVES BY CAMPUS

- Solid Waste Management
 - Waste management is done by composting
 - Recycling of used paper is carried out through authorized vendor.
 - There is ban on single use plastic and plastic crockery in the campus.
 - One side printed paper is re-used for internal communication.
 - **Emphasis is laid on circulating e-notices and assignments.**
- Renewable Energy
 - Solar power plant of capacity 218 KW is installed on building roof.
 - College is using solar water heaters for hostel and canteen.
 - The college is using solar lights for street lights.
- Tree Plantation Drives
 - Three plantation drives were carried out in the current year in the Campus.
 - Plants survival rate is around 90-95%
- Air Pollution Reduction
 - Personal Vehicles (Students) are not allowed in the campus
 - College is in process to pursue air quality monitoring by NABL approved lab.



- Environment Committee Initiatives – Lady Irwin College has NAAC Cr-VII committee which also acts as the Environment Committee of the College. Eco-club of the college also supports the initiatives taken by the Environment Committee.
- College is collecting rain water in tanks, which is further used for gardening purpose.
- College is making planters from used plastic containers and bottles, and thus promoting recycling.
- Awareness of students and staff regarding garden waste management in the college
- Students are made aware and trained to identify the common animal and plants of the college campus
- A nutritional and a herbal garden have been developed in the college
- Organic farming is practiced in the college to sensitize students and other staff.
- Various other activities such as poster making competitions, seminars and webinars, participation in govt. missions such as UBM and WWF is being carried out by the college.
- ‘Plantation Drive’ and other competitions on the occasion of ‘World Environment Day, 5th June, 2022.
- ‘AquaFest’, a poster competition and a quiz competition on the occasion of ‘World Water Day, 20th March, 2022. The event witnessed participation from more than 90 students from schools, colleges and universities across the country.
- Sustainability Week’ 2022 – Harit Prem Bharat Mahotsav 22 (Green mask making, virtual run, green photography, green reel making etc.), 23rd-29th Jan’2022.
- ‘Connect4Climate’, a climate change event on the occasion of ‘International Day of Climate Action, 24th Oct, 2021. The event witnessed participation from more than 90 students from schools, colleges and universities across the country.
- ‘Wildlife Mania’, a wildlife quiz on the occasion of ‘National Wildlife Week, 2nd – 8th Oct, 2021’. The event witnessed participation from more than 80 students from schools, colleges and universities across the country.
- Webinar on ‘Community Participation for Sustainable Rural Development’ (Speakers: Ms. Anjali Makhija, COO, S M Sehgal Foundation; Ms. Pooja O Murada, Principal Lead, Outreach for Development, S M Sehgal Foundation; Ms. Arti M. Grover, Senior Program Lead, Outreach for Development, S M Sehgal Foundation), held on 27th July’ 2021.
- Webinar on ‘Solid Waste Management: Challenges and Strategies’ (Speaker: Mr. Sourabh Manuja, Technical expert, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ GmbH), held on 24th July’ 2021.



- o Webinar titled “ climate crisis and impact on urban biodiversity” by Dr Robin Suyash, Department of Environment Studies, Sri Venkateshwara College on 4th October, 2021
- o Webinar titles “A travel and travelers perspective on biodiversity and natural landscape of India” by Mr. Kumar Bharat, Founder Glory trip, on 8th October, 2021
- o Lecture Series on environment & climate change communication 2022 was organized on the story of E-waste in India by Ms. Priti Mahesh, Chief Program Coordinator, Toxics Link. The date of lecture was 7th February 2022.
- o 15th Annual Symposium on Sustainable Development of the Department of Resource Management and Design Application, Lady Irwin College, University of Delhi in collaboration with School of Planning, Design and Construction, Michigan State University was held on 29th June’ 2022, supported by Energy Efficiency Services Ltd. (a Joint Venture of four reputed public-sector undertakings NTPC Limited, Power Finance Corporation Limited, REC Limited and POWERGRID Corporation of India Limited) and Net Zero Goal. The theme of the event this year was Green Energy and Sustainable Habitat: Policies and Prospects. Eminent speakers from government and industry shared their insights on the theme.
- o Webinar series on ‘Sustainable Development: Technologies, Policies and Practices – Part II’, Resource person: Dr. A. K. Tripathi, Consultant, MNRE; Former Director General, NISE, Government of India, February-March’ 2022:
 - Webinar on “Entrepreneurship in solar sector”, 4th Feb’ 22 Webinar on “Skill development initiatives in solar sector”, 11th Feb’ 22
 - Webinar on “Recent Developments in Solar Energy”, 4th March’ 22
 - Webinar on “Bio-Energy Development in India”, 11th March’ 22
- o Webinar series on ‘Sustainable Development: Technologies, Policies and Practices’, Resource person: Dr. A. K. Tripathi, Former Director General, NISE, Government of India, September-November’ 2021:
 - Webinar on “Energy efficient green buildings: concept and developments”, 27th Sep’ 21
 - Webinar on “Energy and resources used by buildings: Sustainable and otherwise”, 4th Oct’ 21
 - Webinar on “Solar rooftop systems: Concepts, designs and policies”, 11th Oct’ 21
 - Webinar on “Solar water pumps: A sustainable way for water pumping”, 11th Nov’ 21
 - Webinar on “Solar parks: Concepts, design and development”, 22nd Nov’ 21
 - Webinar on “Contemporary research areas in solar energy”, 29th Nov’ 21
- o Webinar on ‘Business Responsibility and Sustainability Reporting: Linking Compliance to Performance’, Resource person: Ms. Gayatri Subramaniam, Director, Association of Women in



Business, Former Chief Programme Executive, Indian Institute of Corporate Affairs, Ministry of Corporate Affairs, Government of India, 27th July' 2021.

- o Webinar on 'Gaps in bridges in CSR', Resource person: Ms. Gayatri Subramaniam, Director, Association of Women in Business, Former Chief Programme Executive, Indian Institute of Corporate Affairs, Ministry of Corporate Affairs, Government of India, 6th July' 2021.
- o Online slogan writing and photography competition on the theme "only one earth" on 5th June, 2022.
- o A campaign on importance of soil health and its conservation, SAVE SoIL was conducted on 4th May 2022. Students of the college participated in poster making and slogan writing competition.

Club/Committee Members Details

Environment Committee/NAAC Cr-VII Committee – Prof. Puja Gupta, Prof. Meenakshi Mital, Dr. Meenal Jain, Ms. Vishakha Sambhav, Ms. Sakshi Wadhwa, Ms. Shefali Chopra, Ms. Mitali Yadav

Eco Club - Prof. Sushma Goel, Prof. Deepali Rastogi, Dr. Rajneesh Dwevedi

Garden Committee – Prof. Rupa Upadhyay, Dr. Dolly Florence, Prof. Mani Bhasin Kalra, Prof. Puja Gupta

Waste Management and Paper Recycling Committee - Prof. Meenakshi Mital, Prof. Puja Gupta, Dr. Meenal Jain, Ms. Vishakha Sambhav, Ms. Shefali Chopra, Ms. Mitali Yadav

Solar Photovoltaic (SPV) Committee – Prof. Meenakshi Mital, Prof. Puja Gupta, Dr. Meenal Jain



RECOMMENDATIONS

- Messages regarding water conservation should be displayed.
- Lady Irwin College should go for rain water storage tank as per National Building Code 2016/Green Building Codes
- Lady Irwin College should initiate drip irrigation to save water in campus
- Flow rate of taps should be checked, it should not be more than 2.5 litres/minute.
- Environment friendly criteria should form an important part of purchase policy.
- Initiatives towards awareness generation regarding environment consciousness should be expanded to larger section of the community.
- Establish an E-waste collection center in campus.
- More initiatives towards reducing energy consumption should be taken up on incremental basis year by year.

CONCLUSION

This audit involved extensive consultation with audit team, interactions with key personnel on wide range of issues related to Environmental aspects. Lady Irwin College has Environmental Committee for sustainable use of resources.

College is considering the environmental impacts of most of its actions and makes an intensive effort to act in an environmentally responsible manner. Even though the college is performing very well, the recommendations in this report highlight other ways in which the College can work to improve its actions towards environmental consciousness.

Few things that are important to initiate includes checking of water flow of taps, installation of water meters and NOC of bore well from the CGWA/concerned authority.



REFERENCES:

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules:1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices

Transparency of Green Audit Report

Green audit report is one of the useful means of demonstrating an organization's commitment to openness and transparency. If an Organisation believes it has nothing to hide from its stakeholders, then it should feel confident enough to make its green audit reports freely available to those who request them. As a basic rule, green audit reports should be made available to all stakeholders.

ANNEXURE – PHOTOGRAPHS OF ENVIRONMENT CONSCIOUSNESS



Well ventilated building structure



Well maintained College campus



Lush green campus



Color coded dustbins



Paving stone installation
in the College



Playground



Ornamental Plants in the
campus



Indoor Plants in the
campus



Green Nursery



Green grassland



Classrooms as per NBC guidelines with more than 40% window ratio



Spacious and well equipped labs



Water energy poster



Recycled paper drying



Plantation drive by the students



'Plantation drive'



Solar PV installed in campus



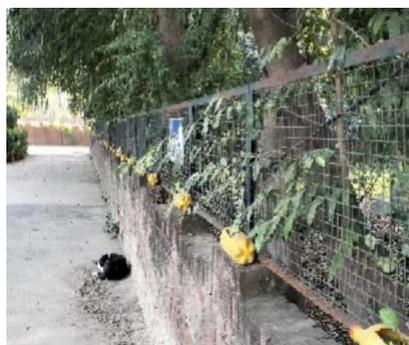
Solar PV installed on building roofs



Water purifier with auto push taps



Rainwater collection tank



Plantation in recycled plastic bottles



Plantation in recycled plastic cans

***** **END OF THE REPORT** *****